

**CLAIMS**

1. A beam optical component (1; 201) for acting on a charged particle beam (63) including:

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a first element (3; 203) having a first opening (9; 209) for acting on said charged particle beam (63);

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at least a second element (5; 205) for acting on said charged particle beam (63);  
at least one distance piece (20a, 20b, 20c) positioned between said first element (3; 203) and said at least second element (5; 205) to provide for a minimum distance between said first element (3; 203) and said second element (5; 205); and

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a first holding piece (30a; 30b; 30c) for abutting said first element (3; 203) to said at least one distance piece (20a, 20b, 20c),

whereby said first holding piece (30a; 30b; 30c) is attached to said at least one distance piece (20a, 20b, 20c).

20 2. The beam optical component (1; 201) according to claim 1, comprising a second holding piece (32a; 32b; 32c) for abutting said second element (5; 205) to the at least one distance piece (20a, 20b, 20c).

25 3. The beam optical component (1; 201) according to claim 2, whereby the second holding piece (32a; 32b; 32c) is attached to the at least one distance piece (20a, 20b, 20c).

30 4. The beam optical component (1; 201) according to any one of the previous claims, whereby the at least second element (5; 205) has a first structured portion (10; 15; 210) to be aligned to said first opening (9; 209).

5. The beam optical component (1; 201) according to claim 4, whereby the first structured portion (10; 15; 210) comprises a second opening (10, 210) to act on the charged particle beam.

6. The beam optical component (1; 201) according to any one of the preceding claims, comprising a third element (7) having a second structured portion (11; 17) to be aligned to the first opening (9; 209).
- 5 7. The beam optical component (1; 201) according to claim 5, whereby the second structured portion (11; 17) comprises a third opening (11) to act on the charged particle beam.
- 10 8. The beam optical component (1; 201) according to claim 5 or 6, comprising a further at least one distance piece (22a; 22b; 22c) to define a minimum distance between the second element (5; 205) and the third element (7).
9. The beam optical component (1; 201) according to claim 7, comprising a third holding piece (34a; 34b; 34c) for abutting the second element (5; 205) to the further at least one distance piece (22a; 22b; 22c).
- 15 10. The beam optical component (1; 201) according to claim 7 or 8, comprising a fourth holding piece (36a; 36b; 36c) for abutting the third element (7) to the further at least one distance piece (22a; 22b; 22c).
- 20 11. The beam optical component (1; 201) according to any one of the preceding claims, whereby the at least one distance piece (20a, 20b, 20c) and/or the further at least one distance piece (22a; 22b; 22c) are each three distance pieces.
- 25 12. The beam optical component (1; 201) according to any one of the preceding claims, whereby the at least one distance piece (20a, 20b, 20c) and/or the further at least one distance piece (22a, 22b, 22c) are spherically shaped.
- 30 13. The beam optical component (1; 201) according to any one of the preceding claims, whereby the at least one distance piece (20a, 20b, 20c) and/or the further at least one distance piece (22a, 22b, 22c) are spherically shaped bodies having at least one waist to reduce the lateral extension of the sphere.
14. The beam optical component (1; 201) according to any one of the preceding claims, whereby the first, second and/or third holding piece (30a; 30b; 30c; 32a; 32b; 32c; 34a;

34b; 34c; 36a; 36b; 36c) includes a pin, a holding screw (50), a setscrew (51) or a notched pin (57) stucked into the respective distance piece (20a; 20b; 20c; 22a; 22b; 22c) for the attachment of the first, second and/or third holding piece (30a; 30b; 30c; 32a; 32b; 32c; 34a; 34b; 34c; 36a; 36b; 36c) to the respective distance piece (20a; 20b; 20c; 22a; 22b; 22c).

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15. The beam optical component (1; 201) according to any one of the preceding claims, whereby the first, second and/or third holding piece (30a; 30b; 30c; 32a; 32b; 32c; 34a; 34b; 34c; 36a; 36b; 36c) includes respective nuts (50; 52) for abutting the respective electrode to the respective distance piece.

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16. The beam optical component (1; 201) according to any one of the preceding claims, whereby the first, second and/or third holding piece (30a; 30b; 30c; 32a; 32b; 32c; 34a; 34b; 34c; 36a; 36b; 36c) includes springs (50; 53) for abutting the respective first, second and/or third element to the at least one and/or the further at least one distance piece at predetermined pressures.

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17. The beam optical component (1; 201) according to any one of the preceding claims, whereby the first, second and/or third elements (3; 5; 7) are respective first, second and/or third electrodes.

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18. The beam optical component (1; 201) according to any one of the preceding, whereby the first, second and/or third elements (203; 205) are respective first, second and/or third pole pieces.

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19. A charged particle beam device having a beam optical component according to any one of the previous claims.